Value of Effective and Efficient Knowledge Management Strategies

Presented by

Eric Vogel

Outreach/User Services Manager

ASRC Aerospace Corporation

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Information Can Mean Life or Death

- Johns Hopkins hexamethonium research project in 2001
  - Incomplete information = volunteer fatality
- Three Mile Island Nuclear Plant
  - Too much information = nuclear meltdown

Overview

- Documenting scientific research or technological innovations is the essential completion of the activity
- Access to pertinent research and innovations can have significant value
- The NASA Scientific and Technical Information (STI) Program provides this value to the Agency, especially in meeting new initiatives
- Every project manager plays a role to ensure that NASA knowledge value is used and enhanced

What We Will Discuss as Related to NASA Project Management

- The President's Management Agenda
- The role of information in management
- The NASA STI Program support to the NASA transformation
- Building and using NASA's STI resources

"We are not here to mark time, but to make progress, to achieve results, and to leave a record of excellence."

President George W. Bush
October 15, 2001

The President's Management Agenda

- Five mutually reinforcing government-wide initiatives
  - Strategic management of human capital
  - Competitive sourcing
  - Improve financial performance
  - Expand electronic government
  - Budget and performance integration

Strategic Management of Human Capital

- Capture and disseminate the knowledge of a retiring workforce
  - *"The Administration will adopt information technology systems to capture some of the knowledge and skills of retiring employees."*
  - *"Knowledge management systems are just one part of an effective strategy that will help generate, capture, and disseminate knowledge and information that is relevant to the organization's mission."*

Competitive Sourcing

- Make information more readily available to private companies (contractors)
  - *"Because agencies do not maintain adequate records on work performed in-house, they have often taken years to define the jobs being considered for competition."*

Improve Financial Performance

- Improve efficiency
  - *“Re-engineering reporting processes and expanding use of web-based technologies.”*
  - *“Routinely produce information that is reliable, to ensure consistent and comparable trend analysis over time and to facilitate better performance measurement and decision making.”*

Expand Electronic Government

- Cut time and cost
  - *“Create easy-to-find single points of access to government services.”*
  - *“Share information more quickly and conveniently between the Federal and state, local, and tribal governments.”*
  - *“Improve the Federal government’s use of the web.”*

Budget and Performance Integration

- Archiving results proves performance
  - *"Agencies will be expected to identify high quality outcome measures, accurately monitor the performance of programs, and begin integrating this presentation with associated cost."*

The Role of Information in Management

- Value-based approach
  - Good information reduces costs
  - Information saves time
  - Information improves decision making

Good Information Reduces Costs

- A literature search resulting in a new concrete mix for bridge decks is credited by the New York DOT for providing an estimated life-cycle cost savings of nearly $9 million per year

- Reported benefit-cost ratios for information services range from 16:1 to 3:1

Source: Value of Information Services
U.S. Department of Transportation
October 1998

Information Saves Time

- Avoids duplicate efforts
- Stops unproductive activities
- Modifies design approaches
- Corrects bad information

Information Improves Decision Making

- 1993 survey of 299 managers
  - 84% reported that information contributed to better decisions being made
  - 50% said that information led them to handle some aspect of tasks differently

Source: Value of Information Services
U.S. Department of Transportation
October 1998

NASA Scientific and Technical Information Program

- Collects STI from all NASA centers
- Acquires STI from over 50 countries worldwide
- Produces an STI knowledge base of over 3.7 million citations and abstracts
- Provides worldwide access to STI that increases productivity and minimizes duplication of research

Components of the STI Program Include

- NASA Headquarters STI
- NASA's Agency-wide program office, the Scientific and Technical Information Program Office, located at Langley Research Center, Hampton, Virginia
- Center for AeroSpace Information (CASI) in Hanover, Maryland
- NASA STI Program at all NASA centers

NASA Center for AeroSpace Information (CASI)

- Operational center for the NASA STI Program
- Builds and maintains the NASA Aeronautics and Space Database
- Manages registration and distribution functions
- Offers a wide array of information products and services

NASA STI Products and Services

- Products
  - NASA Technical Reports Server
  - NASA Image eXchange (NIX)
  - Custom bibliographies on demand
  - Custom thesauri
  - Custom database creation/maintenance
  - Specialized indexing
- Services
  - Online ordering of documents and NASA videos
  - Automatic and on-demand document distribution
  - Database search training and support
  - Reference services
  - NASA STI Help Desk (STI assistance)
  - Archiving of NASA STI Report Series documents

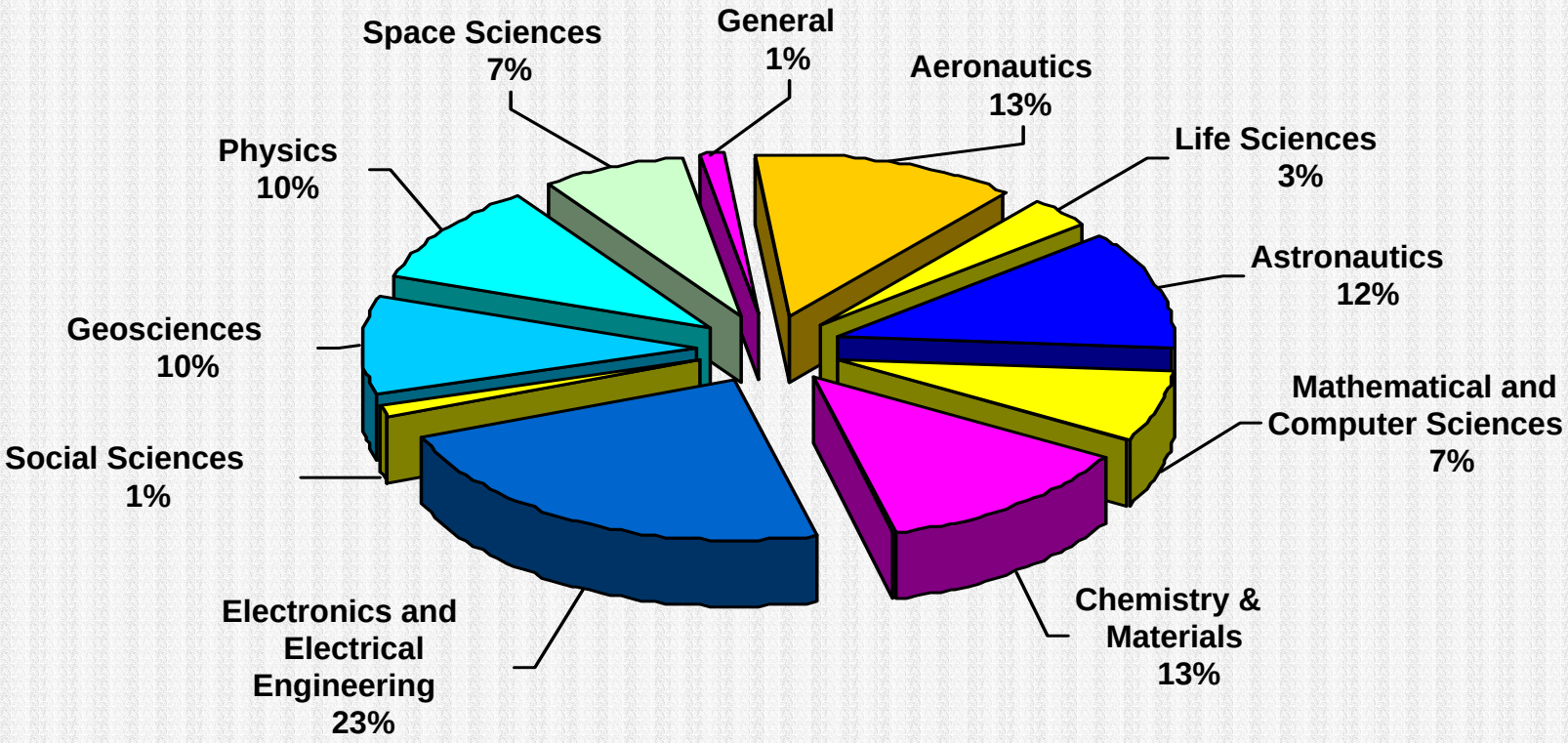
NASA Aeronautics and Space Database

- Over 3.7 million metadata records with citations and abstracts of aerospace-related technical reports, videos, journal articles, and conference proceedings
- Over 230,000 NASA documents as full-text images in searchable portable document format (PDF)
- Custom display formats, saved search capability, and online document and video purchase
- Free registration for NASA, government agencies, prime contractors, and grantees

NASA STI Program Support to the NASA Transformation

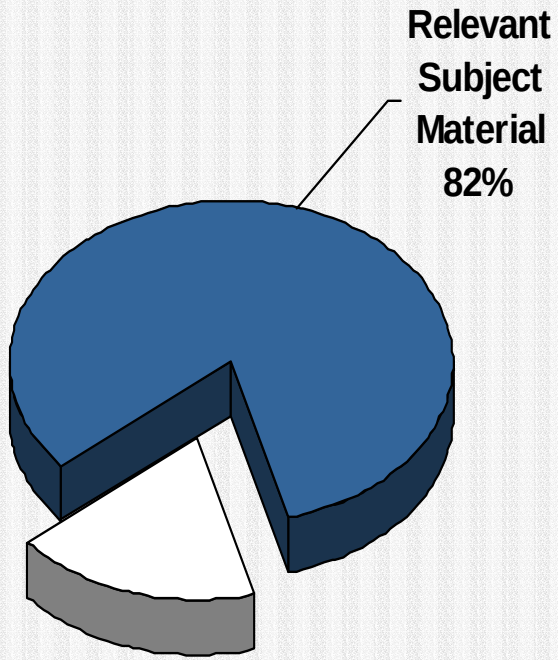
- STI knowledge base with subject content relevant to the four NASA Mission Directorates
  - Science Mission Directorate
  - Aeronautics Research Mission Directorate
  - Space Operations Mission Directorate
  - Exploration Systems Mission Directorate

STI Contributions by Subject



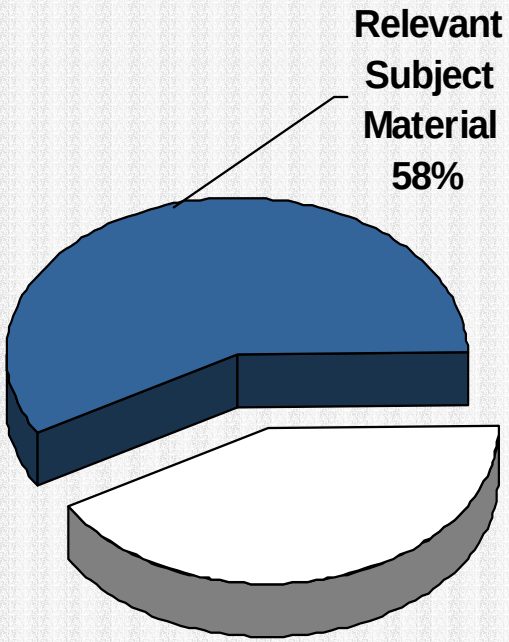
Science Mission Directorate

- Relevant Subject Material
  - Astronautics
  - Chemistry and Materials
  - Engineering
  - Geosciences
  - Life Sciences
  - Mathematical and Computer Sciences
  - Physics



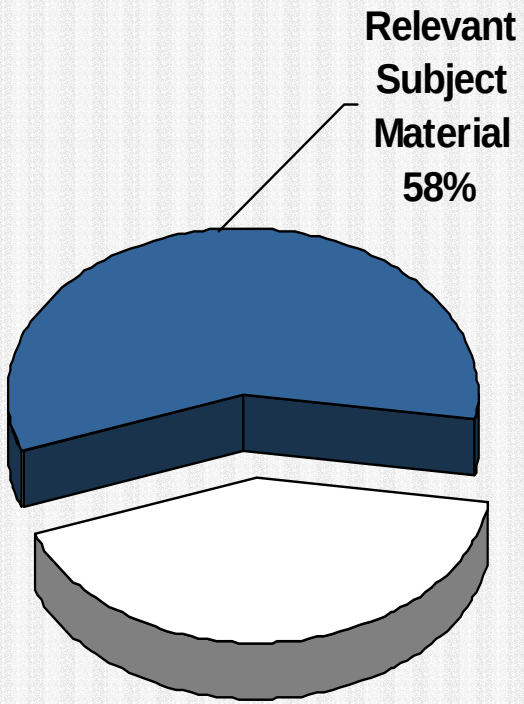
Aeronautics Research Mission Directorate

- Relevant Subject Material
  - Aeronautics
  - Chemistry and Materials
  - Engineering
  - Life Sciences
  - Mathematical and Computer Sciences
  - Social and Informational Sciences



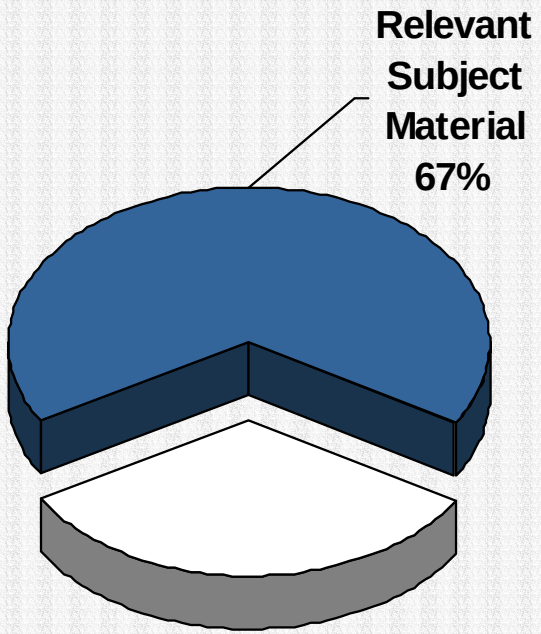
Space Operations Mission Directorate

- Relevant Subject Material
  - Astronautics
  - Chemistry and Materials
  - Engineering
  - Life Sciences
  - Mathematical and Computer Sciences
  - Social and Informational Sciences



Exploration Systems Mission Directorate

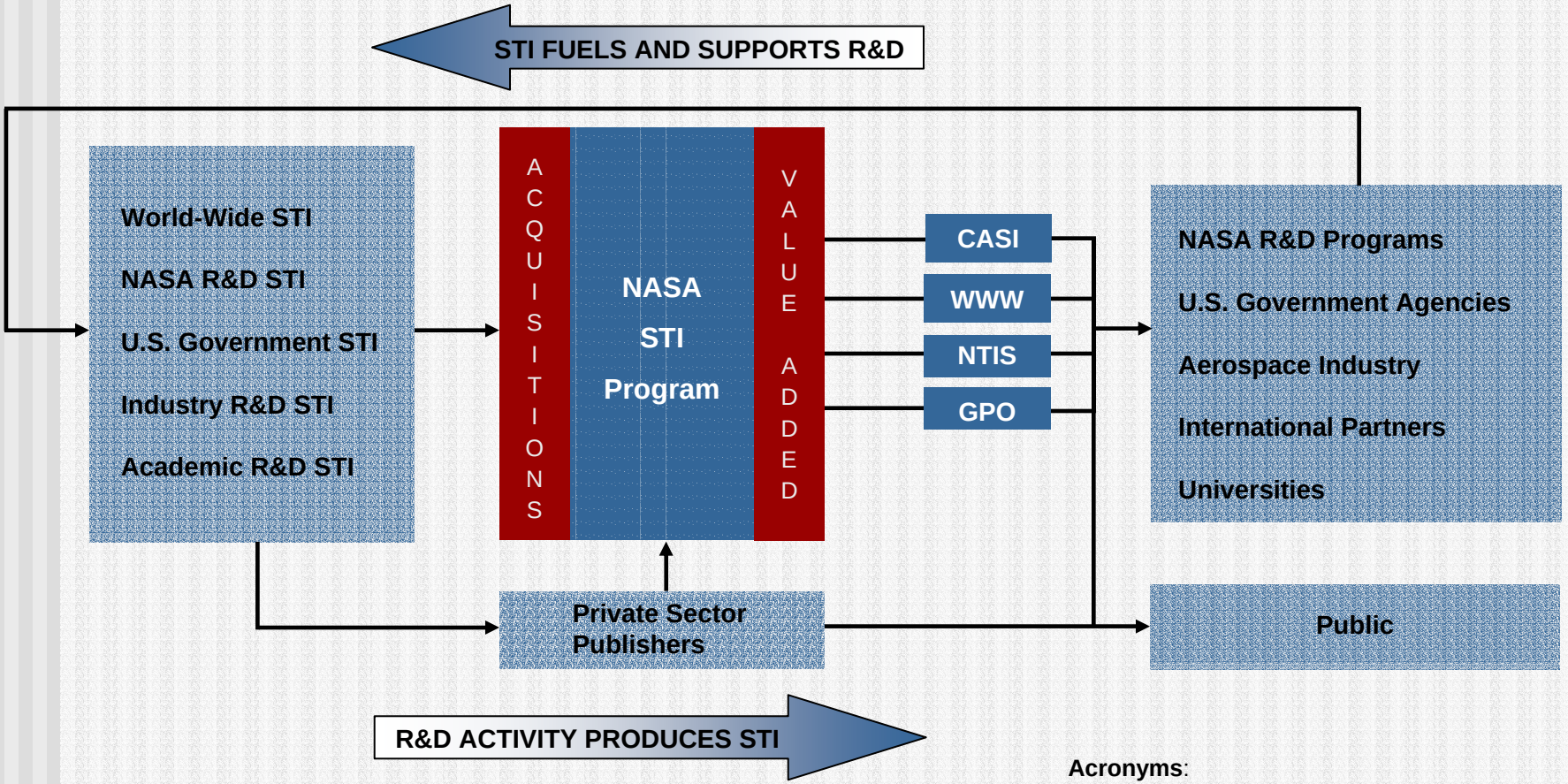
- Relevant Subject Material
  - Astronautics
  - Chemistry and Materials
  - Engineering
  - Life Sciences
  - Mathematical and Computer Sciences
  - Physics
  - Social and Informational Sciences



Practical Management Applications of the STI Knowledge Base

- Bid and proposal process; proposal evaluation
- Market surveys of other government organizations
- Experts directory within and outside of NASA in specific subject areas and disciplines
- Metric to measure the impact of projects by analyzing follow-on work

Flow of Scientific and Technical Information



Acronyms:
NTIS: National Technical Information Services
GPO: Government Printing Office
CASI: Center for AeroSpace Information
WWW: World Wide Web

Building and Using NASA's STI Knowledge Resources

- Center Publications Department
- Dissemination of NASA STI
- Center Libraries

Center Publications Department

- What can they help me do?
  - Walk you through the publications process step-by-step
  - Make sure you have appropriate approvals and required forms
  - Distribute publications to CASI for appropriate archiving and dissemination

Dissemination of NASA STI

- What happens when my publication goes to CASI?
  - Distribution authorization checked
  - Processed into the NASA Aeronautics and Space Database
  - Distributed to NASA center libraries and NASA Technical Reports Server
  - Distributed to GPO, Library of Congress, NTIS, NARA (as appropriate)

Center Libraries

- Each center library provides information and services to its patrons
  - Access to books, journals, and online databases
  - Center research assistance including literature searches and guidance using online databases such as the NASA Aeronautics and Space Database

Written Guidelines and Training

- NASA Procedural Requirements (NPR) 2200.2A, Guidelines for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information (STI)

- Online SOLAR STI Training at: https://solar.msfc.nasa.gov/solar/delivery/public/html/newindex.htm

Additional Assistance?

- Visit NASA STI exhibit
- Visit NASA STI website at http://www.sti.nasa.gov
- CASI Outreach Contacts:
  - Michelle Mariano – KSC, SSC, DFRC, MSFC, LaRC
    - 301-621-0131
    - mmariano@sti.nasa.gov
  - Kurt McIntyre – GSFC, ARC, JPL, GRC, HQ
    - 301-621-0205
    - kmcintyre@sti.nasa.gov
  - Chris Stark – JSC
    - 301-621-0309
    - cstark@sti.nasa.gov